

III. Remarks

Applicants have carefully reviewed the Office Action mailed October 27, 2009. Applicants respectfully request reconsideration of the present application in view of the amendments and following remarks. Claim 53 has been amended to more clearly define the invention. Support for the amendments can be found, for example, in the original claims, in the specification at page 11 lines 5-15, at page 14 lines 12-13, at page 22 lines 12-18, at page 22 line 36 to page 23 line 11, at page 24 line 25 to page 25 line 2, and in the drawing figures. Claim 58 has been canceled. Reconsideration of the pending claims is respectfully requested.

Drawings

The drawings have been objected to under Rule 1.84(p)(5). Specifically, the Examiner asserts that reference number 1 "is not in Figure 1A as stated in the specification."

Applicants note, however, that Rule 1.84(p)(5) requires only that "reference characters mentioned in the description must appear in the drawings." As reference number 1 is shown in Figure 1c, though not in Figure 1a, this is sufficient to satisfy the rule. Moreover, applicants can find no instance in the Specification where it is indicated that reference "1" appears in Figure 1a. In fact, at page 16 lines 21-24 it states, "A plurality of electrochemical cells form in layers the region of an electrochemical cell stack 1 arranged between end plates (see Figure 1c)."

It is therefore submitted that the drawings comply fully with the rules and the objection should be withdrawn.

Specification

The Examiner has also asserted an objection to the title as not being descriptive.

The Title has been amended herein to be more descriptive of the claimed invention, so that the objection should be withdrawn.

Claim Rejections – 35 U.S.C. §112

Claims 53-59 and 62-63 have been rejected under 35 U.S.C. 112, second paragraph, it being asserted that the claim 53 is “incomplete for omitting essential structural cooperative relationships of elements.” The omitted structural cooperative relationships are said to be: the bipolar plates include openings for “media,” the flank has at least one perforation “for conducting the media.” The Examiner concludes that since the present claim does not elaborate on how such features are structurally interrelated and/or they are systemically integrated, it is uncertain how the structure as instantly claimed is capable of providing media or the media through the electrochemical cell stack, bipolar plates, and, in particular, through the resilient bead arrangement and the flank perforation.

It is submitted that the application makes a clear distinction between openings (e.g. 4) which extend in a plane perpendicular to the layering direction (6) and

perforations (8) which are located on the flank (7a, 7b) of the beads (7) with the flanks (7a, 7b) of the beads extending non-perpendicular to the layering direction (6). To clarify the relationship between the two, claim 53 has been amended to provide that the at least one perforation allows the media that passes through said at least one of said openings in a direction parallel with said direction of said layering of said plurality of electrochemical cells to pass through the flank of the bead in a direction perpendicular to said direction of said layering of said plurality of electrochemical cells.

It was further asserted that the term “the layering” at line 7 of claim 53 lacked antecedent basis. Applicants have amended claim 7 to clarify that the “the layering of a plurality of bipolar plates” is that first referred to in line 2 of that claim.

Thus, the amended claims all fully comply with 35 USC §112, and the rejections thereunder should be withdrawn.

Double Patenting

Claims 53, 58-59 and 62 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 15, 17, 20-21, 23 and 28 of copending Application No. 10/496725. Although it is acknowledged that the claims are not identical, they are asserted to not be patentably distinct from each other because the scope of claim 15, 17, 20-21, 23 and 28 of copending Application No. 10/496725 as instantly amended fully circumscribes the subject matter of the present application; if not at least the combination of claims does

represent obvious variations of the presently claimed invention.

Applicants respectfully traverse the provisional rejection of the noted claims under nonstatutory obviousness type double patenting.

Recently, the CAFC, in *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, used the teaching, suggestion, and motivation test “flexibly applied” so as to require that any *prima facie* case of obviousness be accompanied by an explicit showing where the relied on prior art provided the requisite teaching, suggestion, or motivation. 520 F.3d 1358, 1364-65 (Fed. Cir. 2008). This holding is fully in line with historical precedent. It is a well established legal principle that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Clearly none of the cited claims of Application No. 10/496725 teach or suggest a perforation in a flank of a bead, which flank extends in a direction that is not perpendicular to the direction of the layering of the plurality of electrochemical cells, as required by all of the instantly pending claims. Accordingly, the instantly pending claims cannot be rendered *prima facie* obvious by any of the claims of the Application No. 10/496725, and this provisional rejection should be withdrawn.

Claim Rejections – 35 U.S.C. 102

1. Claims 53-58 and 62 have been rejected as anticipated by the PCT publication, WO 02/69416.

With regard to claim 53, the Examiner asserts as follows:

"The WO'416 discloses a fuel cell apparatus including at least two facing plates, stacked together but spaced apart by resilient sealing beads disposed on at least one of the plates. The resilient beads are adapted to facilitate control of fluid flows between the plates and are thus called fluid sealing beads (Abstract/ Page 3, lines 8-31 & FIGURE 3). Each plate contains at least one bolt aperture for securement of the two plates together. Separate beads disposed about the apertures act as aperture load compensation beads (Abstract Page 3, lines 8-31 & FIGURE 3). The WO'416 discloses stacked fuel cell plates and components (Page 1, lines 8-15 & page 3, lines 24-30).

FIGURE 3 show the configuration of the plate including media holes or apertures (see FIGURE 3). *In this case, the plates represent bipolar plates; and the flank is taken to be represented by ANY part of the bead side either to the right or left (or any structural orientation) of the formed bead or the area along either side thereof. Note that the present claims fail to define the specific structure of the flank with respect to structural arrangement or spatial orientation. Note that the stacking of the fuel cell elements does produce sufficient compression in the stacking direction."*

As amended, claim 53 defines an electrochemical cell stack comprising an electrochemical cell stack having a layering of a plurality of electrochemical cells and including an electrochemically active region, said electrochemical cell stack being under mechanical compression in a direction of said layering of said plurality of electrochemical cells, a plurality of metallic bipolar plates separating said

electrochemical cells from one another, said bipolar plates including openings for media for said electrochemical cells, said openings extending in a direction parallel with said direction of said layering of said plurality of electrochemical cells, at least one resilient bead arrangement around at least one of said openings, said at least one resilient bead arrangement being formed integrally as one piece with one of said plurality of metallic bipolar plates and including at least one flank extending in a direction that is not perpendicular to said direction of said layering of said plurality of electrochemical cells, and at least one perforation through said at least one flank, said at least one perforation allowing the media that passes through said at least one of said openings in a direction parallel with said direction of said layering of said plurality of electrochemical cells to pass through the flank of the bead in a direction perpendicular to said direction of said layering of said plurality of electrochemical cells.

In contrast, WO'416 lacks a bipolar plate that is metallic, and the plates of WO'416 lack any bead having a flank that is not parallel with the bipolar plates, and further lack any perforation in a flank of a bead being formed so as to allow media to flow through the flank in a direction perpendicular to said direction of said layering of said plurality of electrochemical cells. As WO'416 lacks any suggestion of these elements of claim 53, this reference fails to anticipate claim 53. As claims 54-58 and 62 depend from claim 53, these claims must also be patentable thereover. Accordingly, the rejection of claims 53-58 and 62 as anticipated by WO'416 must be withdrawn.

2. Claims 53-54 and 62 have been rejected as anticipated by EP 0408104 ("EP'104") [the parenthetical "at least" is not understood by applicants].

It is stated that EP'104 discloses a fuel cell stack including a set of fuel cell units comprising a set of electrodes and separator plates (acting as the bipolar plates) for separating the fuel cell units (Col 1, lines 3-8; CLAIM 1; FIGURES 2 and 8). The fuel cell has separator plates 7 with a corrugated central portion 5 and gas supplying and exiting openings on flat edges held between an upper and lower partitioning plate with corresponding openings, the partitioning plates 20, 21 being provided with a transfer region between the flat partitioning plates and the separator plate, the connection between the transfer regions and the separator plate comprising a circumferential connection around said openings (CLAIM 1). FIGURES 3-4 show a plate and an arrangement including the electrochemically active area of the fuel cell unit in conjunction with the plates and the openings for conducting media; and a bead arrangement including a region, part, area or side thereof having a perforation for conducting media. Again, the Examiner indicates that *"the flank is taken to be represented by ANY part of the bead side either to the right or left (or any structural orientation) of the formed bead or the area along either side thereof Note that the present claims fail to define the specific structure of the flank with respect to structural arrangement or spatial orientation."*

Applicants note that the separator plates in EP '104, reference numbers 7, are flat plates and contain by no means any beads as required by claim 53.

What may have been confused with bipolar plates in EP'104 are the plates limiting the gas containers 20 and 21, which plates have no reference number on their own. These plates are frames which border to the anode and cathode, respectively. They have a stepped structure each with two levels - one corresponding to its level at the outer edge of the cell and one corresponding to the outer level of the cathode and an anode, respectively. They are clamped with the separator plate by a kind of sleeve which provides for the edge of the opening. The steps as such are by no means resilient. Rather, the construction of EP '104 needs an additional spring-frame, which is also produced separate from the separator plate and the stepped frame plates. Moreover, with fuel cells of the molten carbonate fuel cell, such as in EP'104, the salt provides for the sealing as such.

Thus, EP'104 lacks any teaching or suggestion for a bead, having at least one perforation in a flank thereof that is integrally formed as one piece with a metallic bipolar plate, and which flank is not perpendicular to the direction of the layering of the plurality of electrochemical cells. As a result, EP'104 fails to anticipate claim 53. As claims 54 and 62 depend from claim 53, these claims must also be patentable thereover. Accordingly, the rejection of claims 53-54 and 62 as anticipated by EP'104 must be withdrawn.

3. Claims 53-54 and 62 have been rejected as anticipated by the Uline patent US 3320092 ("Uline") [again, the parenthetical "at least" is not understood by

applicants].

Uline refers to sealing frames only which are not integral with a bipolar plate. Thus, Uline lacks any teaching or suggestion for a bead, having at least one perforation in a flank thereof, that is integrally formed as one piece with a metallic bipolar plate. Moreover, Uline lacks any perforation in a flank of a bead being formed so as to allow media to flow through the flank in a direction perpendicular to said direction of said layering of said plurality of electrochemical cells. As a result, EP'104 fails to anticipate claim 53. As claims 54 and 62 depend from claim 53, these claims must also be patentable thereover. Accordingly, the rejection of claims 53-54 and 62 as anticipated by EP'104 must be withdrawn.

Claim Rejections – 35 USC 103

Claims 59 and 63 have been rejected as obvious over WO'416 and/or EP'104 and/or Uline in combination with either JP 2000-48835 (claim 59) or Turpin US application publication 2004/0137306 (claim 63).


Claims 59 and 63 depend directly from claim 53, and thus are patentable at least on the basis of their dependence from a patentable base claim.

Conclusion

In view of the above, each of the presently pending claims in this application is in condition for allowance. If, however, there are any outstanding issues that can be

resolved by telephone conference, the Examiner is earnestly encouraged to telephone the undersigned representative.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Donald A. Schurr', written over a horizontal line.

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